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EXAMINER	
JEN, MINGJEN	

ART UNIT	PAPER NUMBER
3664	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/808,081	WHITTTON, MATTHEW D.
	Examiner	**Art Unit**
	IAN JEN	3664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 28 November 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-11 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 03/24/2004.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al (US Pat No. 6243637) in view of Narita (US Pat No 5241477).

As per claim 1, Minowa et al shows an automatic transmission having an off-going clutch and an on-coming clutch during a speed ratio shift event (Abstract), on-coming clutch (Col 1, lines 10-50), off-going clutch (Col 1, lines 10-50), controlling clutch using closed loop control to maintain a predetermined slip threshold to avoid slipping (Col, lines 59-63 where slip range is confined by turbine torque, oil pressure; Col 3, lines 25-30; Col 6 , lines 66-Col 7, lines 30), controlling clutch generating an pressure command to which is responsive and that varies with respect to time (Fig 12, Col 2, lines 1-15; Col 2, lines 64-Col 3, lines 8; Col 6, lines 32 -35); causing the clutch to gain torque capacity during controlling the clutch (Fig 7: Col 2, lines 1-15; Col 2 , lines 64 - Col 3, lines 8; Col 5, lines 35 -40) determining at least a portion of the clutch pressure command (Col 9 ,lines 55 - Col 10, lines 40). Minowa et al does not show

determining when the clutch gained torque capacity using the first derivative with respect to time.

Narita et al shows when the clutch gained torque capacity using the first derivative (Fig 11, Col 3, lines 60- Col 4, lines 25; Col 9, lines 53-64); the first derivative with respect to time (Col 7, lines 5-10 where the data points are plotted with respect to recorded time; Col 2, lines 14-15).

It would have been obvious for one of ordinary skill in the art, to provide the first derivative technique for calculating the timing for clutch gaining the torque capacity, as taught by Narita, to Minowa et al, for providing a practical data analyze tool.

As per claim 6, Minowa et al shows a control apparatus for an automatic transmission having an input shaft and an output shaft (Fig 13, input shaft 18, output shaft 24 ; Col 4, lines 46-67); a first clutch and a second clutch (Abstract, Col 5, lines 53-55); on-coming clutch (Col 1, lines 10-50), off-going clutch (Col 1, lines 10-50); clutches are operatively connected between the shafts to effect a speed ratio change during a shift event by disengagement and engagement of the clutch (Col 4, lines 46- Col 5, lines 3); the controller is programmed and configured to determine the speed ratio between shafts (Controller 31, Input shaft speed Nt, Output shaft speed Ne; Col 2, lines 50 – Col 3, lines 25; Col 4, lines 45 – Col 6, lines 40; Col 6, lines 66 - Col 7, lines 30) in order to determine the existence of a predetermined slip threshold at clutch (Col 2, lines 50 – Col 3, lines 25; Col 4, lines 45 – Col 6, lines 40; Col 6, lines 66 - Col 7, lines 30); the controller is programmed and configured to control clutch during the shift event using closed loop control (Col 2, lines 50 – Col 3, lines 25; Col 4, lines 45 – Col 6, lines 40; Col 6, lines 66 - Col 7, lines 30) to maintain the predetermined slip threshold by generating an

pressure command (Fig 12, Col 2, lines 1-15; Col 2, lines 64-Col 3, lines 8; Col 6, lines 32 -35) to which the clutch is responsive that varies with respect to time (Fig 12, Col 2, lines 1-15; Col 2, lines 64 - Col 3, lines 8; Col 6, lines 32 -35) ; the controller is programmed and configured to cause the clutch to gain torque capacity during the shift event (Abstract, Fig 7: Col 2, lines 1-15; Col 2 , lines 64 - Col 3, lines 8; Col 5, lines 35 -40); determine at least a portion of the of clutch pressure command (Col 9 ,lines 55 - Col 10, lines 40). Minowa et al does not show a first and second fill chamber to which hydraulic fluid is supplied for hydraulic actuation of the first and second clutch, respectively; a first and second actuator configured to selectively allow pressurized fluid into the first and second fill chamber, respectively. A controller operatively connected to the first actuator and the second actuator to cause selective clutch, respectively; the first derivative with respect to time; to determine when the clutch gained torque capacity using the first derivative.

Narita et al shows a first and second fill chamber (Col 2, lines 65 - Col 3, lines 35, Fig 2A, 2B, accumulator change 64e, backup pressure chamber 64d, second servo apply chamber 2S/A); a first and second actuator (Col 2, lines 65 - Col 3, lines 35, hydraulic circuit 113,114,38) ; fill chamber to which hydraulic fluid is supplied for hydraulic actuation of clutch, respectively (Col 2, lines 65 - Col 3, lines 35); actuator configured to selectively allow pressurized fluid into fill chamber, respectively (Col 2, lines 65 - Col 3, lines 35).

A controller operatively connected actuator to cause selective clutch, respectively; when the clutch gained torque capacity using the first derivative (Fig 11, Col 3, lines 60- Col 4, lines 25; Col 9, lines 53-64); the first derivative with respect to time (Col 7, lines 5-10 where the data points are plotted with respect to recorded time; Col 2, lines 14-15).

It would have been obvious for one of ordinary skill in the art, to provide the first derivative technique for calculating the timing for clutch gaining the torque capacity, as taught by Narita, to Minowa et al, for providing a practical data analyze tool and provide to provide hydraulically means, as taught by Narita et al, to Minowa et al, in order to perform shifting.

3. Claims 2-5, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minowa et al (US Pat No. 6243637) in view of Narita (US Pat No 5241477) and further in view of Vilim et al (US Pat No 5745382).

As per claim 2, Minowa et al shows a on-coming clutch (Col 1, lines 10-50), clutch gained torque capacity (Fig 7; Col 5, lines 35 -40). Minowa et al in view of Narita does not show a neural network method.

Vilim et al shows a neural network method (Fig 2, Col 3, lines 40-Col 4, lines 37; Col 2, lines 1-15; Col 2, lines 64-Col 3, lines 8).

It would have been obvious for one of ordinary skill in the art to provide a neural network method to Minowa et al, as taught by Vilim et al, for the purpose of providing automated teaching model for complex dynamic system

As per claim 3, Minowa et al shows on-coming clutch (Col 1, lines 10-50). Minowa et al does not show the first derivative is characterized by local minima and maxima, and determining when the on-coming clutch gained torque capacity includes generating a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima.

Narita shows the first derivative is characterized by local minima and maxima and determining when the clutch gain torque capacity (Fig 11, Col 3, lines 60 - Col 4, lines 25; Col 9, lines 53-64); generating a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima (Col 7, lines 5-10 where the data points are plotted with respect to recorded time in Fig 11; Col 2, lines 14-15).

It would have been obvious for one of ordinary skill in the art to provide a first derivative technique to measure local maxima and minima to Minowa et al, as taught by Narita, since first derivative is the rate of change provides measure to torque peak or torque down by local maxima and minima.

As per claim 4, Minowa et al does not show classifying each of the data points into one of a first group and a second group using a k-means algorithm, the data points in the second group having later time values than the data points in the first group; and determining the data point having the earliest time value in the second group.

Vilim et al shows the method further comprising classify each of the data point into one of a first group and a second groups using a k -means algorithm(Col 5, lines 49-65; Col 7 ,liens 43-Col 8, lines 15), the data point in the second group having later time values than the data pint in the first group and determining the data point having the earliest time value in the second groups(fig 4A, Fig 4B; Col 9, lines 1- Col 10, lines 15 where Class II data point have later time values and Class II data point starts at 0 sec, which is the earliest time value). It would have been obvious for one of ordinary skill in the art to provide a commonly well k means algorithm by clustering data into different groups with respect to different to Minowa et al, as taught by

Vilim et al, a well known qualitative means for the purpose of providing parameter values for data signal presented for viewing.

As per claim 5, Minowa et al shows on-coming clutch (Col 1, lines 10-50), off-going clutch (Col 1, lines 10-50); causing the clutch to gain torque capacity (Fig 7: Col 2, lines 1-15; Col 2 , lines 64 - Col 3, lines 8; Col 5, lines 35 -40)

. Minowa et al does not show the clutch includes an apply chamber, the clutch is hydraulically actuated by filling the apply chamber with fluid, supplying fluid to the apply chamber, determining a measure of the total volume of fluid supplied to the apply chamber at the time value of the data point having the earliest time value in the second group.

Narita et al shows the clutch includes an apply chamber, the clutch is hydraulically actuated by filling the apply chamber with fluid (Col 3, lines 1-15), supplying fluid to the apply chamber (Col 3, lines 1 -15; Col 3, lines 60- Col 4, lines 15; Col 10, lines 35 -43 where the fluid pressure is the driving mean for clutch and the clutch gains the torque capacity by the control of fluid pressure), determining a measure of the total volume of fluid supplied to the apply chamber at the time value of the data point having the earliest time value in the second group (Fig 11, Col 3, lines 40-57 where total fluid volume is measure in fluid pressure density at the earliest time value in the second group starts at 0 sec).

It would have been obvious for one of ordinary skill in the art to provide the hydraulically actuate chamber, as taught by Narita et al, to Minowa et al, in order to provide a actuation means for the clutch due to the fluid pressure.

As for claim 7, Minowa et al shows on-coming clutch (Col 1, lines 10-50), off-going clutch (Col 1, lines 10-50); the controller is programmed and determine when the clutch gained torque capacity using the first derivative (Col 9, lines 55- Col 10, lines 40). Minowa et al does not show using a neural network method.

Vilim et al shows a neural network method (Fig 2, Col 3, lines 40-Col 4, lines 37; Col 2, lines 1-15; Col 2, lines 64-Col 3, lines 8).

It would have been obvious for one of ordinary skill in the art to provide a neural network method to Minowa et al, as taught by Vilim et al, for the purpose of providing automated teaching model for complex dynamic system

As for claim 8, Minowa et al does not show the control apparatus wherein the first derivative is characterized by local minima and maxima, and the controller is programmed and configured to generate a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima.

Narita shows the control apparatus wherein the first derivative is characterized by local minima and maxima(Fig 11, Col 3, line s60- Col 4, lines 25; Col 9, lines 53-64), the controller is programmed and configured to generate a set of data points (Col 7, lines 5-10 where the data points are plotted with respect to recorded time; Col 2, lines 14-15), each of the data points including a time value and a first derivative value of one of the local minima or maxima(Col 7, lines 5-10 ; Fig 11; Col 2, lines 14-15).

It would have been obvious for one of ordinary skill in the art to provide the first derivative measurement to mathematical local maxima and minima as taught by Narita, to Minowa et al, in order to provide the desired rate of change information.

As for claim 9, Minowa et al does not show the control apparatus where the controller is programmed and configured to classify each of the data points into one of a first group and a second group using a k-means algorithm, the data points in the second group having later time values than the data points in the first group, and wherein the controller is programmed and configured to determine the data point having the earliest time value in the second group.

Vilim et al shows the control apparatus where the controller is programmed and configured to classify each of the data points into one of a first group and a second group using a k-means algorithm(Col 5, lines 49-65; Col 7, lines 43 - Col 8, lines 15), the data points in the second group having later time values than the data points in the first group, and wherein the controller is programmed and configured to determine the data point having the earliest time value in the second group(Fig 4A, Fig 4B; Col 9 ,lines 1- Col 10, lines 15 where class II data point have later time values and Class II data point state at 0 Sec, which is the earliest time value).

It would have been obvious for one of ordinary skill in the art to provide k means algorithm by clustering data in group and time as taught by Vilim et al, to Minowa et al, for providing a determination and visualization in data parameters.

As for claim 10, Minowa et al does not show the control apparatus, wherein the controller is programmed and configured to determine a measure of the total volume of fluid supplied to the apply chamber at the data point having the earliest time value in the second group.

Narita shows the control apparatus where the controller is programmed and configured to determine a measure of the total volume of fluid supplied to the apply chamber (Fig 11, Col 3, lines 40-57; Col 3, lines 1-15; Col 3, lines 60-Col 4, lines 15).

Vilim et al shows the data point having the earliest time value in the second group (Fig 4A, Fig 4B; Col 9 ,lines 1- Col 10, lines 15 where class II data point have later time values and Class II data point state at 0 Sec, which is the earliest time value)

It would have been obvious for one of ordinary skill in the art, to provide the fluid volume determine means, as taught by Narita, along with the data analyze means, as taught by Vilim et al, to Minowa et al, in order to provide a fluid volume data analyze means.

As for claim 11, Minowa et al shows a method for use with an automatic transmission having an off-going clutch and an on-coming clutch during a speed ratio shift event (abstract), on-coming clutch (Col 1, lines 10-50), off-going clutch (Col 1, lines 10-50); controlling the clutch using closed loop control to maintain a predetermined slip threshold avoid slip (Col 2, lines 59-63 where slip is controlled by turbine torque, oil pressure; Col 3, lines 25-30; Col 6, lines 66- Col 7, lines 30), controlling the clutch including generating an clutch pressure command to which the clutch is responsive and that varies with respect to time (Fig 12, Col 2, lines 1-15; Col 2, lines 64- Col 3, lines 8; Col 6, lines 32-35); causing the clutch to gain torque capacity by supplying fluid to the apply chamber during controlling the clutch (Fig 7; Col 5, lines 35-40); determining at least a portion of the clutch pressure command (Col 9, lines 55- Col 10, lines 40).

Minowa et al does not show the clutch being characterized by hydraulic actuation when an apply chamber is filled with sufficiently pressurized fluid; the first derivative with respect to

time; first derivative being characterized by local minima and maxima; generating a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima; classifying each of the data points into one of a first group and a second group using a k-means algorithm, the data points in the second group having later time values than the data points in the first group; determining the data point having the earliest time value in the second group; and determining a measure of the total volume of fluid supplied to the apply chamber at the data point having the earliest time value in the second group.

Narita shows the clutch being characterized by hydraulic actuation when an apply chamber is filled with sufficiently pressurized fluid (Col 2, lines 65 – Col 3, lines 35); first derivative being characterized by local minima and maxima (Col 7, lines 5-10 where the data points are plotted with respect to recorded time in Fig 11; Col 2, lines 14-15); generating a set of data points, each of the data points including a time value and a first derivative value of one of the local minima or maxima (Col 7, lines 5-10 where the data points are plotted with respect to recorded time in Fig 11; Col 2, lines 14-15);

Vilim et al shows classifying each of the data points into one of a first group and a second group using a k-means algorithm (Col 5, lines 49-65; Col 7, lines 43- Col 8, lines 15), the data points in the second group having later time values than the data points in the first group (Fig 4, Col 9, lines 1- Col 10, lines 15); determining the data point having the earliest time value in the second group; and determining a measure of the total volume of fluid supplied to the apply chamber at the data point having the earliest time value in the second group (Fig 11, Col 3, lines 40-57).

It would have been obvious for one of ordinary skill in the art, to provide the first derivative technique, as taught by Narita along with the data distribution means as taught by Vilim et al, to Minowa et al, for providing a practical data analyze tool.

Response to Arguments

Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues Minowa et al does not show “controlling the off-going clutch using closed loop control to maintain a predetermined slip threshold”. Minowa et al does show controlling the off-going clutch using closed loop control to maintain a predetermined slip threshold (Abstract, Col 2, lines 50 – Col 3, lines 45; Col 4, lines 25 – 45; Col 6, lines 66 – Col 7,lines 55; Fig 1, Fig 2; Fig 13) where the off-going clutch is the disengaging clutch. Furthermore, in order to avoid slipping, a predetermined slip threshold range must be defined first and maintained. It is office's position that predetermined slip allowance is required to avoid slipping.

However, now grounds of rejection are applied in this office action specifically address the argument from the applicant. Claims 1-11 are now rejected in a new ground of rejection, which responds to the applicant arguments.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IAN JEN whose telephone number is (571)270-3274.The examiner can normally be reached on Monday - Friday 9:00-6:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ian Jen/
Examiner, Art Unit 3664
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